

REMARKS

This Amendment is responsive to the Office Action mailed May 16, 2008. After entry of this Amendment, claims 1-17 are pending in this application and subject to examination. Claim 18 is cancelled. Claims 1, 11, and 12 are amended. Support for these amendments is found in the specification at page 5, lines 3-5; page 6, lines 11-12; page 10, lines 2-11; and in claims 1, 11, and 12 as originally filed. No new matter is added.

Reconsideration of the application as amended is respectfully requested in view of the following remarks.

Objection to Claim 1

Claim 1 stands objected to for reciting the phrase “proviso that *that* the sum.” The Examiner suggests that this phrase should instead read “proviso that the sum.” Applicants have amended claim 1 as suggested by the Examiner. Applicants believe this amendment obviates the Examiner’s objection and respectfully request its withdrawal.

Objection to the Specification

The specification stands objected to for lacking a Brief Description of the Drawings section. Applicants have amended the specification to contain such a section. Applicants believe this amendment obviates the Examiner’s objection and respectfully request its withdrawal.

Rejections Under 35 U.S.C. § 112

Claims 6, 7, 11, and 12 stand rejected as indefinite.

Claim 6

It is the position of the Examiner that claim 6 is indefinite for reciting “pyridine” in the definition of aryl on the ground that “pyridine is a heteroaromatic group which is excluded from

claim 1.” Paragraph 4 of the May 16, 2008 Office Action. Applicants respectfully traverse. However, in the interest of expediting prosecution, Applicants have amended claim 1 to include “heteroaromatic” ring systems in the definition of aryl. Applicants believe this amendment obviates the Examiner’s rejection and respectfully request its withdrawal.

Claim 7

It is the position of the Examiner that the recitation in claim 7 that “formula have a total of two aryl substituents which are attached to the spirobifluorene unit either via ... positions 2 and 7 or 2 and 2’” renders it indefinite because aryl groups in these positions would require both “m” and “n” to equal 1, which would result in four aryl substituents instead of two, as claimed. Applicants respectfully traverse. Applicants respectfully point out that “m,” as defined in claim 6, “is the same *or different* at each instance and is 0 or 1.” Under this definition, it is clear to the skilled artisan one “m” can be 1 while the other two can be 0, *i.e.*, the values for “m” are not required to be all 0 or all 1. Thus, the skilled artisan would clearly recognize that the compound of formula (1) has a total of two aryl substituents when “n” and one “m” is 1 and the remaining two “m” values are 0. As such, two aryl substituents can be bound to the spirobifluorene in positions 2 and 7 or in positions 2 and 2’, as claimed. Applicants respectfully request withdrawal of this rejection.

Claim 11

It is the position of the Examiner that claim 11 lacks sufficient antecedent basis for the limitation “*the* electron injection layer.” The Examiner suggests that this limitation should read “*an* electron injection layer.” Applicants have amended claim 11 as suggested by the Examiner. Applicants believe this amendment obviates the Examiner’s rejection and respectfully request its withdrawal.

Claim 12

It is the position of the Examiner that claim 12 is indefinite for reciting the limitation “from the classes of the carbazoles ... on spirobifluorenes.” The Examiner suggests that this

limitation should read “from a carbazole, ketone, imine, phosphine oxide, phosphine sulfide, phosphine selenide, phosphazine, sulfone, sulfoxide, silane, polypodal metal complex or oligophenylene based on spirobifluorene.” Applicants have amended claim 12 as suggested by the Examiner. Applicants believe this amendment obviates the Examiner’s rejection and respectfully request its withdrawal.

Rejection Under 35 U.S.C. §§ 112 and 102

Claim 18 stands rejected as indefinite and for being directed to unpatentable subject matter by virtue of reciting a use without any active, positive process steps. Applicants have cancelled claim 18, rendering this rejection moot.

Rejection Under 35 U.S.C. § 103

Claims 1-10 and 12-18 stand rejected as obvious over U.S Patent No. 6,097,147 to Baldo et al. (Baldo) in view of U.S. Patent App. Pub. No. 2002/0122900 to Ueda et al. (Ueda). Claims 11, 15, and 16 stand rejected as obvious over Baldo in view of Ueda and further in view of U.S. Patent App. Pub. No. 2001/0000943 A1 to Fukuoka et al. (Fukuoka). Claim 17 stands rejected as obvious over Baldo in view of Ueda and further in view of U.S. Patent. No. 6,299,796 B1 to Igarashi (Igarashi). Applicants respectfully traverse.

Claims 1-10 and 12-18

It is the Examiner’s position that the light emitting devices of Baldo comprise a hole blocking layer. Paragraph 11 of the May 16, 2008 Office Action. Applicants respectfully disagree. Baldo discloses light emitting devices comprising a substantially transparent anode; a hole transporting layer over the anode; an emission layer over the hole transporting layer; a blocking layer over the emission layer; an electron transporting layer over the blocking layer; and a cathode in electrical contact with the electron transporting layer. Column 3, lines 22-25 of Baldo. In these devices, holes from the hole transporting layer recombine in the emission layer with electrons from an electron transporting layer to form *triplet-based excitons*. Column 3, lines 34-37 of Baldo. The blocking layer used in these devices substantially blocks the diffusion

of *excitons*, thus substantially keeping the excitons within the emission layer to enhance device efficiency. Column 3, lines 28-31 of Baldo. As such, Baldo discloses light emitting devices comprising an *exciton* blocking layer, not a hole blocking layer.

Ueda also fails to disclose the use of hole-blocking layers of any kind in its organic electroluminescent devices and only discloses the use of hole transportation and hole injection layers.

In contrast, claim 1, as amended, recites in relevant part:

“[A]n organic electroluminescent device comprising an anode, a cathode and at least one emission layer comprising at least one matrix material which is doped with at least one phosphorescent emitter, wherein at least one *hole blocking layer* is incorporated between the emission layer and the cathode and comprises at least one compound of the formula ...”

(emphasis added) As such, the organic electroluminescent device of amended claim 1 is required to comprise a hole blocking layer.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. MPEP § 2143.03 (citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Neither Baldo nor Ueda teach or suggest devices comprising hole blocking layers. As such, the combined teachings of these references fail to render amended claim 1 *prima facie* obvious. Furthermore, since claims 2-10 and 12-18 all depend directly or indirectly from claim 1, the combined teachings of Baldo and Ueda likewise fail to render these dependent claims *prima facie* obvious. As such, Applicants respectfully request withdrawal of this rejection.

Claims 11, 15, and 16

The remarks *supra* regarding to claim 1 are incorporated herein by reference in their entirety.

Fukuoka discloses an organic electroluminescence device that comprises an organic layer that optionally comprises a “hole barrier layer.” Paragraph [0115] of Fukuoka. Apart from this brief mention, Fukuoka is silent as to hole blocking layers and provides no motivation to the skilled artisan to substitute the exciton blocking layer of the device of Baldo with a hole blocking layer. As such, the combined teachings of Baldo, Ueda, and Fukuoka fail to render claims 11, 15, and 16 obvious. Applicants respectfully request withdrawal of this rejection.

Claim 17

The remarks *supra* regarding to claim 1 are incorporated herein by reference in their entirety.

Like Ueda, Igarishi also fails to disclose the use of hole-blocking layers of any kind in its electroluminescent elements and only discloses the use of hole transportation and hole injection layers. As such, the combined teachings of Baldo, Ueda, and Igarishi fail to teach or suggest devices comprising hole blocking layers and, thus, fail to render claim 17 *prima facie* obvious. As such, Applicants respectfully request withdrawal of this rejection.

In view of the foregoing amendment and remarks, Applicants believe the pending application is in condition for allowance.

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Amendment dated September 16, 2008
Reply to Office Action of May 16, 2008

Docket No.: 14113-00141-US

Pursuant to 37 C.F.R. § 1.17(a)(1), Applicants submit concurrently herewith payment of \$120.00 for a one-month extension of time. Applicants believe no additional fees are due with this Amendment. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00141-US, from which the undersigned is authorized to draw.

Dated: September 16, 2008

Respectfully submitted,

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